

REMARKS

Reconsideration and withdrawal of the objection and rejections set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1-5 and 11-17 are now pending in the application, with Claims 1 and 11 being independent. Claims 6-10 have been cancelled without prejudice. Claims 1-5, 11-13 and 15-17 have been amended herein.

Claim 6 was objected to for a minor informality. Since Claim 6 has been cancelled without prejudice or disclaimer, this objection is deemed moot.

Claim 2 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. The Examiner suggested that the specification did not explain detection of the separation gap by the recording medium. In response, Claim 2 has been amended to use clearer terms. Reconsideration and withdrawal of the § 112, second paragraph, rejection are requested.

Claims 1, 3 and 6 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,502,545 (Tsuruoka). Claim 2 was rejected under 35 U.S.C. § 103 as being unpatentable over Tsuruoka in view of U.S. Patent No. 4,549,826 (Stoeberl). Claims 4, 5, 7 and 8 were rejected under § 103 as being unpatentable over Tsuruoka in view of U.S. Patent No. 6,309,064 (Tanno et al.). Claims 9 and 10 were rejected under § 103 as being unpatentable over Tsuruoka. Claims 11-17 were rejected under § 103 as being unpatentable over Tsuruoka in view of Tanno et al. These rejections are respectfully traversed.

As is recited in independent Claim 1, the present invention relates to a recording apparatus for rotating an endless belt member and supplying electricity to the belt member so as to attract a recording medium to the surface of the belt member and performing recording on the recording medium by a recording device. The apparatus includes an electrical feeding member capable of feeding selectively a first electrical voltage value for attracting the recording medium or a second electrical voltage value for releasing the attraction of the recording medium to a position of the endless belt member located opposed to the recording device, a conveyance failure detection element for detecting a conveyance failure of the recording medium and a control portion for performing control of the belt member and the electrical feeding member based on a detection signal of the conveyance failure detection element. The electrical feeding member feeds the second electrical voltage value to the position of the endless belt member located opposed to the recording device.

As is recited in independent Claim 11, the present invention relates to a recording apparatus provided with a conveying mechanism for conveying a recording medium, by using an endless belt member rotating in contact with the recording medium, to a position opposed to a recording device and an attracting device for attracting the recording medium to the endless belt member at the position opposed to the recording medium. The apparatus includes a conveyance failure detection element for detecting conveyance failure of the recording medium which is attracted to the belt member and conveyed and a control portion for controlling the attracting device to reduce or remove an attraction force of the endless belt member at a position opposed to the recording device

according to the detection of the conveyance failure by said conveyance failure detection element.

With the above arrangements, when a recording medium is jammed, the attraction force of the portion of the conveying belt opposed to the recording device can be reduced or removed so that the recording medium can be removed in a state of the conveying belt being stopped. This can solve a problem in the prior art in which a portion of the conveying belt in contact with a destaticizing brush is destaticized and the recording medium is still attracted to the conveying belt. This requires additional time to recover from jamming.

Tsuruoka relates to an image forming apparatus with a jam processing device. When a paper jam occurs, the transfer belt is charged and destaticized for forced ejection of the paper. Tsuruoka uses destaticizing corotrons 37 to destaticize the transfer belt. These corotrons are not located opposed to the recording device.

Accordingly, Tsuruoka fails to disclose or suggest an electrical feeding member feeding a second electrical voltage value, for releasing attraction of a recording medium, to a position of an endless belt member located opposed to a recording device, as is recited in independent Claim 1. Tsuruoka also fails to disclose or suggest controlling an attracting device to reduce or remove an attraction force of an endless belt member at a position opposed to a recording device, as is recited in independent Claim 11.

Thus, Tsuruoka fails to disclose or suggest important features of the present invention recited in the independent claims.

Stoeberl and Tanno et al. have also been reviewed but are not believed to remedy the deficiencies of Tsuruoka noted above with respect to the independent claims.

Thus, independent Claims 1 and 11 are patentable over the citations of record. Reconsideration and withdrawal of the §§ 102 and 103 rejections are respectfully requested.

For the foregoing reasons, Applicant respectfully submits that the present invention is patentably defined by independent Claims 1 and 11. Dependent Claims 2-5 and 12-17 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

Applicant submits that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the objection and rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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Application No. 09/942,577
Attorney Docket No. 03500.015744

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO SPECIFICATION

The paragraph starting at page 6, line 12 has been amended as follows:

FIG. 5 is a [whole block] diagram of [a] an entire recording apparatus of the first embodiment;

The paragraph starting at page 9, line 25 has been amended as follows.

As shown in FIG. 3, when a voltage is applied to the electrode plate 36a, an electric force is generated in FIG. 3 in an arrow mark direction, thereby forming an electrical line of force. By the potential difference between the electrode plate 36a and the earth plate 36b, [an] a fastening or attraction force is generated above the conveyance belt 31 and the recording medium P on the conveyance belt 31 is fastened or attracted thereto.

The paragraph starting at page 10, line 14 has been amended as follows.

As shown in FIG. 4, the fastening force generation means 36 is constituted by an electrode plate 36a made of an electrically conductive metal, an earth plate 36b, a base layer 36c, a surface layer 36d, and the member to be fed 36e and provided in such a manner as to be integrated with the conveyance belt 31 or move along with the movement of the conveyance belt 31. The electrical feeding means is, as described above, constituted

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by the electrical feeding brush 51, an electrical feeding electrode 52 and a support material 53. This member to be fed 36e is substantially in the same flat surface as the surface layer 36d. The electrical feeding brush 51 is brought into contact with the member to be fed 36e by a predetermined pressure and supplies electricity to the same.

The paragraph starting at page 11, line 14 has been amended as follows.

Next, the whole constitution of the recording apparatus of one embodiment according to the present invention will be described by [using] referring to FIG. 5. Particularly, the recording portion, in which [a] recording on a sheet material and the like by a sheet feeding portion, a conveyance portion and a recording head is executed, and a discharging portion in the recording apparatus will be described in order.

The paragraph starting at page 12, line 26 has been amended as follows.

The conveyance portion absorbs or attracts the recording medium P and comprises the conveyance belt 31 as the conveying belt member and a paper rear end sensor not shown (a PE sensor).

The paragraph starting at page 15, line 17 has been amended as follows.

In FIG. 6, reference numeral 80 denotes a control portion, which is constituted by [containing] a CPU 80a which moves according to a control program, a ROM 80b which houses the program, a memory for use [of] in an operation and a RAM 80c which is a memory for storing [a] contamination detection data. A gate array 80d is [a] an LSI which, together with the CPU 80a, controls a signal to the recording head and a signal to the electrical feeding electrode.

The paragraph starting at page 15, line 26 has been amended as follows.

To this control portion 80 as control means, the [followings] following to be described are connected.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A recording apparatus for rotating an endless belt member and supplying electricity to the belt member so as to [absorb] attract a recording medium to the surface of the belt member and performing [a] recording on the recording medium by a recording device, comprising:

an electrical feeding member capable of [supplying electricity to the belt member comprising a portion to be fed at] feeding selectively a first electrical voltage value for [fastening] attracting the recording medium or a second electrical voltage value for releasing [an fastening] the attraction of the recording medium to a position of the endless belt member located opposed to the recording device;

a conveyance failure detection element for detecting a conveyance failure of [said] the recording medium; and

a control portion for performing [a] control of said belt member and said electrical feeding member based on a detection signal of said conveyance failure detection element, said [control portion performing a control of supplying electricity to said belt member at the second voltage value by way of said electrical supply member when the conveyance failure is detected by said conveyance failure detection element] electrical feeding member feeding the second electrical voltage value to the position of the endless belt member located opposed to the recording device.

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2. (Amended) The recording apparatus according to claim 1, wherein said conveyance failure detection element is a detection element which detects a separation gap of the recording medium on [the] said belt member from said belt member in [the] a direction [of] toward said recording device.

3. (Amended) The recording apparatus according to claim 1, [wherein said recording apparatus comprises] further comprising a discharge portion for discharging a recorded recording medium outside the apparatus and said conveyance failure detection element is a discharge conveyance failure detection element for detecting the conveyance failure of the recording medium in the vicinity of the discharge portion.

4. (Amended) The recording apparatus according to any one of claim 1 to claim 3, wherein said recording device is an ink jet recording head for performing [a] recording on the recording medium by emitting ink.

5. (Amended) The recording apparatus according to claim 4, wherein said ink jet recording head uses [a] thermal energy as energy for emitting the ink.

11. (Amended) A recording apparatus provided with a [recording medium conveyance apparatus comprising a conveyance mechanism comprising a belt which conveys by rotating while contacting a recording medium and an fastening force generation mechanism for fastening the recording medium to said belt,] conveying

mechanism for conveying a recording medium, by using an endless belt member rotating in contact with the recording medium, to a position opposed to a recording device and an attracting device for attracting the recording medium to the endless belt member at the position opposed to the recording medium, said apparatus comprising:

[a device support member for supporting the recording device to the position opposing to the recording medium which is fastened by the belt and conveyed;]

a conveyance failure detection element for detecting [the] conveyance failure of the recording medium which is [fastened by] attracted to the belt member and conveyed; and

a control portion for [weakening or eliminating the fastening force generated by said fastening force generation mechanism] controlling the attracting device to reduce or remove an attraction force of the endless belt member at the position opposed to the recording device according to the detection of the conveyance failure by said conveyance failure detection element.

12. (Amended) The recording apparatus according to claim 11, wherein said [fastening force generation mechanism] attracting device comprises a plurality of electrodes which line up in such a manner as to be along [the] a surface [contacting] of the endless belt member that contacts the recording medium [of said belt] and an electrical feeding member for applying a voltage in such a manner that [said] adjacent electrodes of said plurality of electrodes have different potentials.

13. (Amended) The recording apparatus according to claim 12, wherein said plurality of electrodes are provided in the endless belt member.

15. (Amended) The recording apparatus according to claim 12, wherein said control portion performs an elimination of [the] a charge [which is charged] in said plurality of electrodes according to the detection of the conveyance failure by said conveyance failure detection element.

16. (Amended) The recording apparatus according to any one of claim 11 to claim 15, wherein said recording device is an ink jet recording head for performing [a] recording on the recording medium by emitting ink.

17. (Amended) The recording apparatus according to claim 16, wherein said ink jet recording head uses [a] thermal energy as energy for emitting the ink.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO THE ABSTRACT

In [the midst of fastening] conveyance of a recording medium, when a jam occurs and a belt is stopped [once], the recording medium loaded on the conveyance belt [as it is] can be easily removed. The apparatus for rotating the conveyance belt and supplying electricity to the belt so as to [absorb] attract and convey a recording medium on the surface of the belt[, comprising:] includes an electrical feeding member capable of supplying electricity to the conveyance belt comprising portions to be fed at a first voltage value for [fastening] attracting the recording medium or at a second voltage value for releasing the [fastening] attraction of the recording medium; conveyance failure detection elements for detecting a conveyance failure; and a control portion for performing [a] control of the conveyance belt and the electrical feeding member based on a detection signal of the conveyance failure detection element. The [, wherein the] electrical feeding member supplies electricity to the conveyance belt at the second voltage value when the conveyance failure is detected by the conveyance failure detection element.

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